



Navy License Enhances Homeland Port Security

Protects Queen Mary 2 in Her Florida Port

The Naval Facilities Engineering Service Center (NFESC) at Port Hueneme, CA has licensed its Port Security Barrier Technology to Harbor Offshore, Inc. (HOI), a Ventura CA based marine contractor.



The NFESC Port Security Barrier in place protecting the Queen Mary 2 in her winter home at Port Everglades, FL.



Over 20 miles of the barrier technology is already in use at military facilities.

Less than two weeks after signing the licensing agreement, HOI had their first customer, Port Everglades, FL. The Port's initial interest was to protect the winter home of the new Queen Mary 2, (the world's largest and most expensive ocean liner) when she arrived from her maiden voyage January 26, 2004.

Kurt Buehler, NFESC's Information Technology Transfer Branch Head stated, "The Navy protected the Queen Mary 2 by escorting her into the port with the guided-missile destroyer USS Carney. Our port security barrier technology, licensed to HOI, will help keep her secure in her

winter home port. These barriers can help protect all the valuable assets within a harbor. We want to see these commercialized, and we want to help out the private sector and the commercial world as well," Buehler said. Security officials at the port also hope the barrier system will add a layer of security to the port's three petroleum slips.

The Navy began developing the fence system in response to the bombing of the USS Cole in 2000. Port security has been relying on patrols, vessel patrols, Coast Guard, and commercial security vessels. The Port Security Barrier system is comprised of a

From the Regional Coordinator's Desk Kurt Buehler



Robert Taylor (left) one of the 4 inventors of NFESC's Barrier Technology, is congratulated by Kurt Buehler for winning the FLC Far West Award for Outstanding Technology Development.

Spring is here, and the FLC Far West Region is ramping up to spread the word about federal laboratory opportunities and successful transfers of technology.

In addition to the recent success NFESC has had with our Barrier Technology (see adjoining article), I am also pleased to share the many successes of our other Far West Laboratories.

The FLC is awarding 24 Excellence in Technology Transfer Awards for 2004. The Far West Region's Pacific Northwest National Laboratory (PNNL) is receiving 3 of these awards, which makes them one of the most honored laboratories by the FLC, with a total of 57 FLC awards since the program began in 1984.

The Idaho National Environmental Engineering Laboratory (INEEL) has recently licensed its Hazmat Cam, which is being sold by View Systems of Baltimore MD.

The FLC Far West Region is also active

INEEL Law Enforcement Technology

Firearm Gives Officers Valuable Seconds During Engagements

When law enforcement officers encounter forced entry into a building or room, seconds can be the difference between life and death. Engineers in the national security program at the U.S. Department of Energy's Idaho National Engineering and Environmental Laboratory have developed a firearm that can give officers valuable seconds.

The Idaho Integrated Breaching Shotgun combines into a single weapon a shotgun for destroying door hinges or locks during a rapid, forced entry with the traditional automatic rifle for returning gunfire. Instead of an officer having to switch weapons during entry or having one officer breach a door and step away as another rushes through - losing valuable seconds - the Integrated Breaching Shotgun gives an officer split-second use of either weapon.

The Breaching Shotgun also gives officers the option of carrying a combination lethal/nonlethal weapon. The shotgun can fire nonlethal cartridges, such as beanbags or salt.

Engineers designed the breaching shotgun to fit under the barrel of the rifle. They made several modifications to the shotgun's operation so officers can use either weapon with-

out repositioning their hands to reach the triggers. Also, they redesigned the shotgun to deliver more energy from the shell as it exits the barrel, making the shotgun more effective for forced entries.

The DOE's Office of Intelligence's Applied Technology Program approached the INEEL for assistance in developing this unique weapon for a federal law enforcement agency. The DOE program matches technology needs in the federal arena with researchers within the national laboratory system.

An INEEL National Security group tackled the project. Working with law enforcement agencies, the team developed a prototype model in just four months. The model is now being demonstrated for other law enforcement agencies.

The INEEL is applying for five patents related to the Integrated Breaching Shotgun, has submitted the technology for the prestigious R&D 100 Award national competition, and has started discussions with a gun manufacturer interested in producing and marketing the firearm.

Contact: Kathy Gatens 208-526-1058

*Continued from page 1: **Homeland Port Security***

floating fence constructed of a synthetic net with a steel base, and is moored to the ground with deadweight anchors. The barriers can have a gate, or multiple gates, that can be opened and closed by security personnel.

From concept to steel prototype, the process for the current barrier design took approximately eight months during 2000 and 2001. NFESC tested the barrier designs in wave tanks at the U.S. Naval Academy, building 1:56 and 1:10 scale models in which the barriers were put through the worst-case environmental conditions. A full-scale test with a 38 foot remote control boat was used, and the data was studied carefully using numerical modeling techniques. The net result was a demonstrated effectiveness against high-speed boats, and proven in-water operational performance with a simple, low cost design.

HOI Project Manager, Mark Wood, said the barrier systems are specially designed for each location. The fence rises eight feet above the water surface. "They're like big erector

sets," Wood said. More than 20 miles of barrier have already been installed at military facilities around the world, and 15 more sites are planned for the next two years.

HOI will continue to modify and improve the barriers, which might include different pontoons or latching mechanisms. HOI will share their findings with the Navy so that everyone will end up with a better port barrier system.

"The license signing was held in Washington, D.C., to add formality and visibility to the event," Buehler said. "We wanted to make Washington, D.C. folks aware of the work and engineering that we're doing out here." he said.



The Queen Mary 2 on her maiden voyage from Southampton, England to Fort Lauderdale, FL. The 800 million dollar QM2 is the largest ocean liner ever built.

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Harbor Offshore Inc. 805-639-2205

Laboratory Profile

DOE - Albany Research Center (ARC)

Technology Transfer Contact:

Mr. Paul Turner

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Background:

The Albany Research Center (ARC) is a materials research center that is dedicated to providing solutions that make the Nation's energy systems safe, efficient, and secure. ARC research directly contributes to National energy needs by providing information on the performance characteristics of materials being specified for the current generation of power systems, on the development of cost-effective materials for inclusion in the next generation of fossil fired power systems, and for solving environmental emission and waste problems related to fossil fired energy systems.

The Center, located in Albany, Oregon, has a staff approximately 90. The Center was founded in 1942 as a part of the U. S. Bureau of Mines, and in 1995 was transferred to the U. S. Department of Energy, Office of Fossil Energy.

Mission:

To provide solutions that make the Nation's energy systems safe, efficient, and secure.

Areas of Expertise:

The Albany Research Center is a unique materials science research center that offers a broad suite of capabilities and expertise in materials research. ARCs research program focuses on extending component service lifetimes through the improvement and protection of current materials, by the design of new materials, and defining the service operating conditions for new materials in

order to ensure their safe and effective use. Emphasis is placed on high-temperature testing (corrosion, wear, erosion, etc.) and modeling in environments anticipated for the Vision 21 concepts, on the development of sulfidation/oxidation resistant materials which can also resist thermal cycling for pressurized circulating fluidized bed reactors, development and repair of refractory materials for coal gasifiers, and development of micro-reactors for fuel cells.

Some current research areas include:

Advanced Foil Lamination Technology - Micro-reactors for energy related applications including reformers, hydrogen separation, and heat exchange.

Oxidation and Sulfidation Resistant Materials - Novel stainless steels with performance characteristics necessary for process streams in advanced heat recovery and hot gas cleanup systems (700 to 800oC).

Carbon Dioxide Sequestration by Mineral Carbonation Using a Continuous Flow Reactor - Demonstrates a continuous flow reactor that will advance the mineral carbonation studies from laboratory-scale batch experiments to the initial stages of industrial process development.

Integrated Removal of Pollutants from Fossil Fueled Power Plants - Investigates an approach that fully integrates emission handling from conventional fossil fueled plant designs by compressing flue gases with heat recovery.

Advanced Refractories for Gasifiers - Develops technologies that will reliably extend the lifetime of refractory liners in slagging coal gasifier systems to at least three years; and improve thermocouple assemblies to more effectively withstand the molten slag attack of coal ashes.

Mechanisms of Corrosion Under Ash Deposits - Determines the influence of coal ash deposits, molten salts, and thermal gradients on the mechanisms of corrosion of alloys used in coal-fired, coal gasification, and biomass power plants.

Non-Isothermal Corrosion and Oxidation - Determines the effects of thermal gradients and heat fluxes on the corrosion behavior of metals commonly used in high-temperature components of fossil energy power plants.

Facilities and Resources:

Melting and Casting Facility

- Electric arc furnaces for smelting or melting (50 lb to 1 ton).
- ARC-patented induction slag ingot and casting furnaces for titanium, zirconium, and columbium.
- Two 6 inch vacuum arc/electroslag remelting consumable electrode furnaces.
- Skull casting furnace, a split graphite resistor furnace, and a vacuum sintering furnace.
- Four induction furnaces. (Vacuum casting and vacuum melting available)
- Ferrous and nonferrous (grams to 300 lbs). Skull casting furnace (static and centrifugal casting). Expertise in evaporative pattern and all types of sand casting is available.

Fabrication Facility

- Various sizes of heat treating furnaces, some capable of handling material up to 8 feet in length and temperatures up to 2,300ø F. A vacuum furnace (to 2000ø F) is also available.
- 750 ton, variable speed, 14-inch rolling mill (4 inches in thickness, 16 inches in width).
- 4-inch rolling mill.

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Success Story

INEEL's Hazmat Cam Licensed for Commercialization by View Systems, Inc.

From the streets of New York City to the waters of Puget Sound, first responders who must confront the burgeoning threat of chemical, biological or radioactive weapons will soon have broader access to a compelling new tool to bolster their personal safety - the Hazmat Cam.

Designed by engineers at the U.S. Department of Energy's Idaho National Engineering and Environmental Laboratory,



The HAZMAT CAM camera unit is able to transmit high quality video in the most difficult environments.

Hazmat Cam is a lightweight wireless video camera system that first responders carry into an incident scene. Housed in a tough, waterproof flashlight body, the camera system sends back live images to a command post located up to several miles away from the incident area. View Systems, Inc., Baltimore, MD., has signed an exclusive license with the INEEL to commercialize this technology.

"Hazmat Cam dovetails perfectly with our security technology product line," said Gunther Than, Chief Technology Officer for View Systems, Inc. "Homeland security is increasingly more important to state and local first responders, and offering the Hazmat Cam commercially makes it easier for them to acquire the technology." The system has already been purchased by several National Guard Civil Support Teams and the U.S. Army.

INEEL Hazmat Cam designer Kevin Young has spent the last year crisscrossing the country, participating in dozens of emergency exercises and demonstrating the camera system across the gamut of field conditions. Perhaps none have been

so challenging as its recent use deep within a three-deck, 150-foot fishing boat in Puget Sound, near Seattle, WA.

"It was like trying to send a signal from inside a steel box," said Young. "But the system was designed to be very flexible, allowing us to move a repeater antenna above deck and place the main receiver in an optimal location." This flexibility allowed Hazmat Cam to send live video from all three decks within the ship to a surface command post.

"Every team wants clear, reliable video, and the Hazmat Cam delivers," said Young. "What makes this system unique is the combination of a triple antenna, true-diversity receiver, which delivers the clear picture, and the waterproof housing, which allows submersible decontamination."

Other features include video encryption and a separate transmitter-and-receiver system called extension link that increases the line-of-sight operating range of Hazmat Cam up to five miles.



The HAZMAT CAM viewing console and true diversity receiver. The three-antenna, true diversity receiver minimizes signal distortion in urban environments.

Hazmat Cam is the second INEEL technology that View Systems, Inc. has licensed. The company also offers a concealed weapons detector called Secure Scan.

Contact: View Systems 877-843-9462

Far West Gets New Laboratory

Ground Broken for U.S. Arid-Land Agricultural Research Center

On Feb. 20, 2004, Federal officials broke ground outside Phoenix for a new \$28 million U.S. Arid-Land Agricultural Research Center. Upon completion in 2006, it will house 30 scientists plus support staff for the Agricultural Research Service, chief scientific research agency of the U.S. Department of Agriculture. The ARS facility will be co-located with the University of Arizona's Maricopa Agricultural Center.

Participants at the groundbreaking ceremony included ARS officials from Arizona and California. "When completed, this new center will be one of the premier agricultural research centers in the world dealing with issues of arid and semiarid lands," said Antoinette A. Betschart, director for ARS' Pacific West Area.



The new facility will combine in one center ARS' U.S. Water Conservation Research Laboratory and Western Cotton Research Laboratory, both currently located in Phoenix.

Scientists at ARS' U.S. Water Conservation Lab conduct research on how crops will perform in the future as atmospheric carbon dioxide levels increase.

Researchers at ARS' Western Cotton Research Laboratory focus on developing ways to help farmers grow cotton more efficiently and minimize damage from diseases and pests.

Completion of the new facility will enable ARS researchers to work more closely with the Maricopa Agricultural Center's researchers and extension faculty.

ONR Launches New Tech Transfer Web Site

New Web Site Allows Easy Access to Navy Opportunities

The Office of Naval Research's new Navy TechMatch web site (www.navytechmatch.org) is designed to help you quickly and efficiently find and communicate with Navy Technology Transfer Managers at 40 Naval Research and Development laboratories located across the United States. You will also find searchable Navy patents available for licensing and Naval facilities available for commercial use. In the future the site will provide an avenue for submitting innovative solutions to Navy technology needs.

Licensable Patents

The U.S. Navy has more than 2,000 patents available for licensing. Research and Development at Naval laboratories has resulted in the creation of diverse technologies that can be applied to commercial products and manufacturing processes. Each patent is associated with a Navy Technology Transfer Manager who can assist you with the licensing process.

Research, Development, Testing and Evaluation (RDT&E) Facilities

The U.S. Navy has more than 250 unique facilities that are available to industry for R&D purposes. These facilities have state-of-the-art equipment and world class support personnel to assist you in your efforts. To learn more about the options for accessing and using these Navy facilities, simply contact the indicated Technology Transfer Manager using

the email link provided.

Laboratory Locator

The Laboratory Locator is designed to help you find Navy Laboratories.



The Navy TechMatch web site employs a state of the art search engine that facilitates simple and comprehensive searching in a user friendly environment.

The Navy TechMatch web site, designed and managed by the West Virginia High Tech Consortium Foundation in Fairmont, WV, has just recently opened and welcomes your comments. The site will continually be updated and have many additional features and refinements in the future. Visit the Navy TechMatch site at: www.navytechmatch.org

PNNL Emerging Technology

Wearable Air Conditioners: Hot New Microtechnology Keeps GI's Cool

Personal protective suits may protect soldiers from chemical and biological weapons, yet extreme heat inside that gear poses a different but equal threat. Without portable cooling technology to ward off heat exhaustion and heat stroke, suits meant to save lives can incapacitate soldiers in just minutes.

Researchers at Pacific Northwest National Laboratory are in the process of developing and demonstrating heat-actuated lightweight and compact cooling technology capable of sustaining manageable temperatures within the protective garb for several hours at a time.

The principles of microtechnology and the very high rates of heat and mass transfer at this miniature scale—about the thickness of the human hair—have enabled man-portable cooling systems now foreseen to weigh in at about three to four pounds. The system can chill water which flows through a vest worn by a soldier capable of providing relief for up to six hours. Instead of using electricity to power a mechanical compressor, heat from burning fuel is used to power the

cooling, thereby replacing bulky, heavy batteries with much lighter fuels. The key for making this portable is microtechnology, which can reduce the size and weight of a system based on traditional technology by five to ten times.

"This same heat-actuated cooling technology will soon be used to benefit both military and commercial applications," said Ward TeGrotenhuis, chemical engineer at the Department of Energy's Pacific Northwest National Laboratory. "From troops operating in desert environments to astronauts or hazmat teams working in extreme conditions, the same principles apply."

Funding for development comes from the U.S. Army Communications-Electronics Command in Ft. Belvoir, VA.

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Continued from page 1: From the Regional Coordinator's Desk

in Technology Transfer Outreach. We will be exhibiting at the National SBIR Conference in Atlanta, GA April 26-29, where over 700 small businesses from around the country are expected to attend. This event is combined with a Small Business Tech Expo which is supported by NASA.

Our Region will be making a presentation in Reno, NV March 29, at the national meeting of the Association of Procurement Technical Assistance Centers (PTAC). We will be discussing working with Federal Laboratories, SBIR/STTR, and state intermediaries. There are 92 PTAC centers across the country. The expected attendance is 300.

The FLC National Meeting will be held in San Diego, CA May 3-7, 2004. This meeting will also include the elections for the Far West Region. If you are a bona fide laboratory representative, please make sure you have responded to the FLC MSO's request for the 2004 Annual Certification of Lab Reps and Alternates. If you have not, you can contact Julie Evans at the MSO via email at jevans@utrsmail.com, or by phone at 856-667-7727 Ext. 137. The Far West region will have our regional business meeting at the San Diego event May 4 from 3 to 5pm.

The Far West will join the Mid-Continent region for our regional meeting September 7-10, 2004, in South Padre

Island, Texas. The meeting will begin with an evening reception on September 7th, two full days on the 8th and 9th, and a half day on the 10th. Additional details will be available soon.

I hope to see you in San Diego in May for our national meeting.

Far West CD Business Cards



Our popular Far West CD Business Cards are in stock, and available to you free of charge.

Please contact Linda Downer at the FLC Far West Support office at 360-582-9106 or by email at linda@zyn.com

Partnership Opportunity

Neutron Brachytherapy for Prostate Cancer

Application:

Treatment for prostate cancer, breast cancer, possibly other early stage, concentrated cancers.

Abstract:

Berkeley Lab is seeking a qualified partner(s) to work with us in a collaborative effort to develop and test the feasibility of a novel neutron point source for the treatment of human prostate cancer. The neutron point source application would be further refined from a recently developed Berkeley Lab compact neutron tube source. The collaboration would include fabrication of a mini neutron tube and complete proof of principle testing of the point source with neutron exposures of cultured human prostate cell lines, representing variable degrees of radioresistance, to confirm the efficacy of the concept. Successful completion of this collaboration will lead to a unique neutron point-source applicator that will take advantage of the favorable high biological effectiveness of neutrons in treating prostate cancer, while minimizing the disappointing normal tissue toxicities associated with a broad-

beam neutron source. Preclinical safety testing in animals could follow the completion of this work.

The benefits of such an approach include:

- Easier, more timely treatment planning and implementation
- Potential reduction in normal tissue toxicity, while still maintaining sufficient tumor irradiation doses
- Lower operating cost
- Lower costs for radiation safety program

Schedule, Cost, and Contract:

LBL visualizes a 12 to 15 month schedule and a total Berkeley Lab cost not to exceed \$150K. Ka-Ngo Leung and his team including Eleanor Blakely would lead the Berkeley Lab effort. Intellectual property benefits are applicable.

LBL's mission includes partnering with industry to commercialize their inventions.

Contact: Chris Kniel 510-486-5566

crkniel@lbl.gov

continued from page 3: Laboratory Profile

- Vacuum (10-4 torr) rolling mill for rolling thin sheet at room and elevated temperature.
- 500 ton reciprocating forge.
- 200 ton Baldwin single action general purpose press.
- Rotary swaging machines.
- Wire drawing (cold only).

Wear and Fracture Facility

- Dry-sand rubber-wheel scratching abrasive wear test to simulate three-body abrasive wear.
- Single and multiple impact wear test equipment to simulate particle erosion.
- Jet erosion dry-particle erosive wear test to simulate particle abrasion in a gas stream.
- Ball-on-Ball and ball on block impact spalling test for determining the resistance to fracture of commercial and experimental grinding balls.
- Pin-on-drum high-stress abrasion test to simulate two-body abrasive wear.
- Jaw crusher, gouging abrasion test to simulate wear in earth-penetrating equipment and in jaw crushers.

- Single multiple-pass scratch tester for simulating the abrasion process.

Corrosion Test Facility

- Severe Environment Corrosion Erosion Facility (SECERF) - The SECERF is a multi-lab, modular facility that allows researchers to safely examine the performance of materials under severely corrosive and/or erosive environments similar to those that exist in fossil fuel fired power plants, gasifiers, and the like.
- Corrosion laboratory with computer-controlled potentiostats, galvanostats, electrochemical impedance spectroscopy, critical pitting temperature, critical crevice corrosion and critical pitting potential systems.
- Autoclaves and high-pressure chambers for elevated-temperature electrochemical and corrosion studies.
- Electrochemically controlled wear-corrosion test systems including pin-on-disk, slurry erosion-corrosion, sliding wear-corrosion, abrasive wear corrosion, and single scratch tests.
- Environmentally-induced cracking system to evaluate stress corrosion cracking, hydrogen embrittlement and corrosion fatigue.

FLC National Meeting May 3-7, 2004, San Diego, California

The FLC is having its annual meeting at the Westin Horton Plaza in San Diego, CA May 3-7, 2004. The FLC is teaming with the DOE's Technology Partnerships Working Group (TPWG). The week's events will carry out the FLC's strategy and objectives by offering the highest quality education, training, and recognition of superior federal T2 achievements.



Calendar

March 21-23, 2004
World's Best Technologies 2004
 Arlington, TX
 602-795-8825
 phuleatt@worldsbesttechnologies.com

March 26-29, 2004
National SBIR Conference
 Atlanta, GA
 360-683-5742 * sharon@dbamlg.com

May 3-7, 2004
FLC National Meeting
 San Diego, CA
 856-667-7727 * www.federallabs.org

June 6-9, 2004
BIO 2004 Annual Convention
 San Francisco, CA
 202-962-6655 * www.bio.org/events/2004

September 7 -10, 2004
FLC MC/FW Regional Conference
 South Padre Island, TX
 360-582-9106 * www.zyn.com/flcfw

Opinions or views expressed in the FAR WEST BULLETIN are those of the contributors and do not necessarily reflect those of the FLC, its officers or representatives.

Send material for consideration to the FLC Far West Support Office at the above address. If you would like this publication sent to any of your local or State organizations/agencies, please send the names and mailing addresses of their points of contact to the Regional Support Office.

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